

Electronic Automated Laboratory Reporting of Communicable Disease & Environmental Laboratory Results to Multiple Programs and Locations by a Local Public Health Laboratory

Steve Gradus, PhD, ABMM, Benjamin Jones, MPH, CHES, Mark Zemke RM, John Tranetzki, MS, Jeff Hussinger, BA, Gerald Sedmak, PhD, Ajajib Singh, PhD, City of Milwaukee Health Department

Abstract

The City of Milwaukee Health Department Public Health Laboratory's (MHDL) Laboratory Information System (LIS) (Soft Computer Consultants, Inc.) sends communicable disease and environmental reports daily and sometimes hourly, to a variety of MHD locations and programs electronically by pre-scheduled LIS-to-remote printer and/or remote modem printing. Reportable disease results are printed hourly to the MHD offices of Disease Control and Prevention (DCP) and are available in read-only format. During summer months recreational water quality results are printed within 30 minutes of resulting to environmental staff for posting on a public beach notification website. Sexually transmitted disease test results &/or summaries, for gonorrhea, chlamydia, syphilis and HIV are batch printed upon test finalization to: the Milwaukee County Jail Medical Clinic within 24 hours of specimen collection, the Milwaukee STD clinic (largest in Wisconsin), located offsite, and to the State of Wisconsin Disease Intervention Specialists, located at different offices at the clinic. O&P results also auto-print to the TB/Refugee Screening Clinic staff, daily. Test result reports for blood and environmental lead are printed directly to lead program staff and asbestos test reports are printed real-time to the offsite offices of the Department of Neighborhood Services. Chlamydia and gonorrhea test results, with demographic data, are electronically transformed and submitted to the State's Region V Infertility Prevention Program, quarterly. Recently, as part of the national effort for Electronic Laboratory Reporting (ELR), MHDL accomplished secure and daily transmission of all positive test results of state reportable diseases from the LIS to the Wisconsin Division of Public Health.

Introduction

A local public health agency, such as the Milwaukee Health Department (MHD), has a team of public health professionals "under one roof" working in concert and in real time to address public health issues. The staff includes food and environmental inspectors (enforcement), epidemiologists (investigation), physicians, clinic nurses, administrators and laboratory scientists. A Laboratory Information System (LIS) has the capability to facilitate information/data exchange among staff to enhance public health response to many local issues while increasing laboratory efficiency. The City of Milwaukee Health Department Laboratory's (MHDL) LIS has been online since December 1996. Recently, due to directed grants and budget constraints, MHDL facilitated distant automated reporting to 11 locations within the department and to the State. As necessary, the appropriate staff were provided secure read-only LIS rights to facilitate information exchange. The LIS also facilitates effective extraction and management of data for local laboratory surveillance reports as well as data reporting to external agencies.

Laboratory Overview

The City of Milwaukee Public Health Laboratory (MHDL) is a 16,000 ft² newly renovated (1999) facility on the 2nd floor of the Zeidler Municipal Building (ZMB). There are 29 staff (21 technical staff) performing >80,000 tests annually. Approximately 85% of these tests, which are mostly microbiological and lead tests, are for the City (pop. ~600,000) and ~15% are fee-for-service tests for agencies and laboratories in metro-Milwaukee (pop. ~1.5 million). This generates an annual revenue for the City of approximately \$200,000 - \$300,000.

Over the recent 2-year span, the laboratory has received well over \$1,000,000 in various grant support in areas such as: Bioterrorism Preparedness, Lead Poisoning Prevention, Sexually Transmitted Disease Prevention, Asthma Research, and Beach Testing.

LIS Description

(Soft Computer Consultants, Inc., SCC)

Since December of 1996, 95% of all laboratory tests, clinical and environmental, are entered into the LIS. In addition to routine reports, the system has SQL and an "epidemiology module" for creating a variety of flexible "ad hoc" reports and queries on an as-needed basis.

Characteristics of the system include:

- IBM pSeries 610 Model 6E1 with 2, 1-Way Power 3-II 450 MHz processors, 2GB RAM, 109.2GB hard disk space configured in RAID-5, 72.8 GB Mirrored Disk, AIX (UNIX) 5.2 OS
- Programming languages: C and db_VISTA
- Multiple workstation
- Dedicated data entry terminals
- 15 report dedicated laser printers
- 12 specimen label printers with barcode capability
- Specific time-schedule result report printing
- Off-site remote result printing
- Ad hoc report fax capability
- Statistical, epidemiological and trending report functionality
- Instant result query
- Fully integrated security module
- Greater than 60,000 entries annually with 500,000 online searchable results

